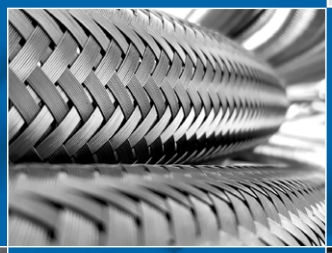
PT. Fajar Benua Indopack
Our Value, Solution for You

FLEXIBLE JOINT

Flexible Metal Hose
Composite Hose
Interlock Hose
Flexible Piping System Solution



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Introduction
Fajar Benua Indopack

Fajar Benua Indopack is a world class Technology, delivering Higher Quality and Innovation Producing hoses between Japanese and Indonesian market leader in flexible piping systems Industry.

Hidroflex Indonesia is a leading and sole manufacturer and distributor in Indonesia of Flexible piping solutions for local and overseas markets. The **Hidroflex Indonesia** approach to flexible piping systems is to manufacture, assemble and supply a comprehensive range of flexible solutions for a wide range of applications using its wealth of knowledge and experiences, utilizing local conditions with an innovative approach to manufacturing at the highest level whilst supporting and exceeding our customers' requirements. This elevated level of Product offering and service coupled with a local presence across Indonesia is unique to **Fajar Benua Indopack**.

Fajar Benua Indopack is Committed to a process of continuous improvement which creates increased value to its customers, employees, shareholders and suppliers.

Continuous Improvement refers to our ongoing pursuit of excellence in everything we do.

The vehicle for driving continuous improvement at **Fajar Benua Indopack** is the Continuous Value Improvement Program (CVIP).

Operational Excellence is :

- The Implementation of world class methodologies (Six Sigma, Lean Toolsets) into all areas of our business.
- Building and nurturing strong long-term relationship with our business partners
- Utilizing employee knowledge, skills and experience to simplify process and enhance efficiencies and outputs
- Challenging ourselves with stretched business targets and innovative project.
- Simplifying our business process to ensure we are "easy to do business with"
- Maximizing returns from investment in fixed assets and working capital

This process will be achieved by :

- Identification of improvement opportunities from constant review, analysis and benchmarking.
- Ongoing measurement – key performance indicators.
- Ongoing training and development of staff
- Ongoing communication of the business values, activities, successes opportunities and challenges.

Our Vision Statement

Compassionate in creating distinguished value for our quality products, expertise and service

- Is seen by our employees as 'a great place to work and to have the opportunities to grow and gain our prosperity'.

- To be Asia Pacific undisputed leader & supplier for providing innovative solutions for:
  - Metallic & Non-Metallic Flexible Piping Systems
  - Metallic Expansion Joints & Engineering Design Fabricated Products
  - Engineering Procurement and Construction

Our Mission Statement

"Fajar Benua Indopack aims to increase value for our customers, employees & stakeholders by applying continuous improvement principles and ensuring we safely provide customers with quality products & services in the right quantity, in the right place, at the right time and at the right price"

Our Core Values

ETRIP
Empower **T**rustworthiness **R**espect to Others **I**nspired Deliver the Best **P**roactivity

Our Merits

- Engineered and Experience driven solutions that meet and exceed the customer's expectations not only by releasing the customers applications, but particularly by our strict adherence to our Quality, Environmental awareness and our ethical principles
- Creative approach to our customers special needs to engineer unique and tailored engineering solutions
- A culture of continuous improvement of all aspects of our business
  A strong Safety and environmental culture
- A wealth of technical and experience- staff with over 30 years of product knowledge all geared towards providing innovative solutions, sound advice and design
- Quality certification – ISO 9001: continuous accreditation for 20 years, AGA and NATA accreditation
- A Wide distribution channels (14 branches) across Indonesia
- Strong After Sales Services support

Profile

Domestic Group
- PT. Fajar Benua Indopack
- PT. Jeil Fajar Indonesia
- PT. Tri Graha Sealisindo
- PT. Global Mandira Semesta

Foreigner Group
- Tofle Co., Inc. (Japan)

Our Sales and Manufacturing Facility - Indonesia
- Office – 148 sq./m
- Factory – 1242 sq./m
- Warehouse – 384 sq./m with High Storage Racking

Our History

Tofle Co, Inc.

- Founded in the 1959
  (Tokyo Flex)
- Developed SS tube in 1962
- AGA Authorised
  Exporting to the US market
- 1972 manufacturing
  Teflon Hose
- 1982-84 Expanded Operations – New Factories / Technology Centre
- Mr Katsutoshi Nakano appointed Company President in 2000
- 2001 ISO9001 certification
- 2004 ISO14001 certification
- 2010-2011 continue to expand its operations

Fajar Benua Group

- Founded in the 1981
  by Mr Handoko Darmawan.
- PT Fajar Benua Indopack
- PT Tri Graha Sealisindo
- PT Jeil Fajar Indonesia
- PT Hidroflex Indonesia
- PT Global Mandira Semesta

Products & Services

Fajar Benua Indopack also offers several value-added services:

- Engineering, Design, Drawings & Project Management
- Full suite of documentation (e.g. material certifications, mill certifications etc.)
- NDT Testing & Testing standards
- Tagging & Traceability including an online Asset Management System
- Hose Fitting including crimping
- Hose Cleaning, assessment & re-fitting
- Hose testing including on-site testing
- Hose installation guidance & training
- Highly trained and experienced internal and External Sales team

Fajar Benua Indopack is a leading manufacturer and distributor of:

- Flexible Metal Hose Assemblies
- Composite Petrochemical Hose & Assemblies
- PTFE Hose & Assemblies
- Flexible Dual Containment Hose
- Specialised Hygienic Hose
- Flexible Rubber Hose Assemblies
- Fluroplastic lining
- Engineered Gaskets
- Expansion Joints in Metal, Rubber & Fabric
- Bioniq© Offshore Rig Supply Hose & Couplings
- Assorted Fittings - Camlocks, Muff Couplings
- Bitumen, Drybreak & Breakaway Couplings

Our Impressive Experience

- Our staff are some of the region's leading experts with significant industry experience, all geared towards solving our customer's flexible piping needs, providing innovative solutions, sound advice and proper design
.
- Our production facilities and quality assurance procedures are audited regularly by major quality authorities such as ISO and Achilles. With a portfolio of trusted brands, superior manufacturing processes, and a strong commitment to quality, we pride ourselves on the quality of our products and processes – so much so we have been ISO 9001 accredited for more than 20 continuous years.

- Strong "Safety First" Culture

Hidroflex Indonesia supplies products to a variety of industries, including, but not limited to

- Coal Steam Gas
- LNG
- Power Generation
- Mining
- Food
- Beverage & Pharmaceutical
- Oil & Gas
- General Plumbing
- Machine and Equipment
- Construction and Building
- Petrochemical Bulk Storage & Distribution
- Automotive
- Chemical Processing
- Storage & Distribution
- Project Engineering
- Marine & Industrial Engine Applications
- Water & Waste Water
- Site Audits & Testing
- Annual
- Service Contracts
- Heating
- Ventilation & Air Conditioning
- Pulp & Paper
- Petroleum Refining

FLEXIBLE METAL HOSE

Flexible Hose assemblies are engineered and fabricated in accordance with our quality process to provide flexibility, strength and reliability to meet our customer's technical specification.

Corrugated metal hose are manufactured to **ISO 10380**, **AS 4041**, **AS 3992**, and **BS 6501** (Part 1, 1991).

The advantages of using stainless steel corrugates tube and braid metal hose include:
1. Suitable for wide temperature ranges from -270°C to + 816°C
2. Compensates for thermal movement, vibration and noise in the piping system.
3. Fire resistant
4. Corrosion resistant
5. Ability to accommodate low and high pressure ranges.

Bellows List

Annular	Super Annular	SUS304 SUS316L	• Thin wall, numerous annular corrugations. • Even thickness tnrougnout the corrugations. • Excellent durability and excellent pressure resistance
	Super Bellow	SUS316L	• Extra-thin wall, numerous annular corrugation. • Flexibility, excellent absorption of vibration, excellent durability against repetition
	Tuf Omega Bellows	SUS304 SUS316L SUS321	• Closed pitch, strong against repetitions bending and vibration
	Tuf Omega Tube	SUS304 SUS316L SUS321	• Excellent durability and excellent pressure resistance
	Omega 2ply Bellows	(Inner)/SUS316L (Outer)/SS304	• Excellent flexibility and durability, safety design according to 2ply construction
Spiral	Excellent Tube	SUS304 SUS316L	• Excellent durability and excellent pressure resistance
	Soft Tube	SUS304	• Small spring rate multipurpose tube
	UFO Flex	SUS321	• Resistance for high pressure and absorption for repetitious vibration
	Ultra Soft Flex	SUS321	• Excellent flexibility and excellent absorption oi vibration

Annular Corrugation

Super Annular & Super Bellow

Construction:

Annular corrugations.

Even thickness throughout the corrugations, excellent durability. It can remove the twisting raise the durabilitybraid shows calculated figures at ambient.

1. Tube without braid shows max pressure when pressurized and remaining elongation is nil.
2. Maximum working pressure of flexible hose with single braid shows calculated figures at ambient.
3. Maximum working pressure of flexible hose witn double braid shows 1/4 of burst pressure.
4. Test pressure shows actual tested figures.

Super Annular Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
8A	8.0	0	11.7	0.15	20	60	0.6	-	0.077	80
		1	13.2				6.6	55.7	0.190	
		2	14.7		30	65	14.7	58.8	0.303	
10A	10.0	0	14.3	0.20	30	100	0.2	-	0.124	80
		1	15.8				7.3	49.8	0.273	
		2	17.3		45	140	16.5	66.2	0.422	
15A	15.0	0	20.0	0.20	35	125	0.8	-	0.180	80
		1	21.5				5.0	26.0	0.376	
		2	23.0		50	175	10.5	42.4	0.572	
20A	20.0	0	26.2	0.20	40	130	0.7	-	0.277	80
		1	27.7				4.3	24.2	0.509	
		2	29.2		60	185	8.2	33.0	0.741	
25A	25.4	0	31.5	0.25	70	190	0.6	-	0.394	50
		1	33.5				4.4	29.7	0.834	
		2	35.5		100	270	8.6	34.5	1.274	
32A	32.0	0	38.6	0.25	90	205	0.2	-	0.490	20
		1	40.6				3.7	21.0	0.975	
		2	42.6		130	290	7.5	30.0	1.460	
40A	40.0	0	48.9	0.30	125	235	0.3	-	0.751	20
		1	50.9				3.4	18.0	1.457	
		2	52.9		175	330	6.4	25.6	2.163	
50A	50.0	0	59.3	0.30	190	270	0.05	-	0.920	20
		1	61.3				2.3	12.3	1.734	
		2	63.3		270	380	42	17.0	2.548	

Super Bellow Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
10A	10.0	1	14.8	0.15	25	70	4.70	24.6	0.181	Regarding Special Over All Length of the hose. Please Consult us.
15A	15.0	1	20.4	0.15	30	80	2.96	11.9	0.232	
20A	20.0	1	25.8	0.15	35	115	2.34	9.4	0.296	
25A	25.4	1	33.0	0.2	60	125	3.05	12.2	0.600	
32A	32.0	1	40.4	0.2	80	145	1.97	7.9	0.721	
40A	40.0	1	49.7	0.2	90	150	2.04	8.2	1.010	
50A	50.0	1	60.5	0.25	120	230	1.33	5.4	1.404	

Special Annular Corrugation

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
3A	3.2	1	8.0	0.15	20	60	13.3	80.0	0.12	Regarding Special Over All Length of the hose. Please Consult us.
		2	9.1				26.8	107.5	0.20	
4A	4.1	1	8.5	0.15	20	60	12.0	63.8	0.13	
		2	10.0				23.8	95.4	0.21	
4.5A	4.5	1	9.5	0.15	20	60	9.8	77.2	0.13	
		2	10.9				25.9	103.9	0.21	
5A	5.45	1	10.4	0.15	20	60	7.8	92.5	0.20	
		2	11.9				23.1	92.6	0.32	
12A	12.0	1	17.8	0.20	45	165	5.7	40.5	0.29	
		2	19.3					54.0	0.44	

Tuf Omega Tube & Tuf Omega Bellows

Construction:

Excellent durability and excellent pressure resistance.
Closed pitch, strong against repetition bending and vibration.

Working and Burst pressure of flexible hose with single and double braid shows calculated figures at ambient.

Tuf Omega Tube Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
25A	27.0	1	38.5	0.3	90	170	3.7	24.3	0.89	5.0
		2	40.5		130	240	9.6	38.6	1.33	
32A	32.5	1	48.5	0.3	110	180	2.4	22.6	1.36	5.0
		2	50.5		155	255	8.5	34.0	2.06	
40A	41.0	1	56.5	0.4	120	200	3.0	19.4	1.85	5.0
		2	58.5		170	280	7.1	28.4	2.67	
45A	46.0	1	63.5	0.4	130	215	2.3	13.8	1.95	3.2
		2	65.5		185	300	5.6	22.5	2.77	
50A	53.5	1	72.5	0.4	135	225	1.7	8.1	2.51	5.0
		2	74.5		190	315	4.2	17.0	3.33	
65A	67.0	1	87.4	0.4	150	260	2.2	12.1	3.07	5.0
		2	89.9		210	365	4.5	18.2	4.24	
80A	78.5	1	103.0	0.4	220	275	1.6	8.5	3.67	5.0
		2	105.5		310	385	3.6	14.4	4.91	
90A	92.5	1	119.0	0.4	240	300	1.2	5.6	4.36	5.0
		2	121.5		340	420	2.7	10.8	6.13	
100A	103.5	1	129.0	0.4	280	350	1.2	6.3	4.74	5.0
		2	131.5		395	490	2.6	10.5	6.51	
125A	128.5	1	156.5	0.45	425		1.41	5.7	6.85	5.0
		2	159.5		600		1.62	8.5	9.32	
150A	152.0	1	183.5	0.45	500		1.02	4.1	7.58	5.0
		2	186.5		700		1.23	6.1	10.33	
175A	177.5	1	209.5	0.5	600		1.24	5.0	10.9	2.5
		2	212.5		840		1.44	7.4	15.2	
200A	203.0	1	238.0	0.5	750		1.11	4.5	11.65	2.5
		2	243.0		1050		1.35	6.7	15.95	
225A	227.0	1	264.0	0.6	850		1.22	4.9	15.13	2.5
		2	269.0		1200		1.53	7.3	20.49	
250A	251.0	1	290.0	0.6	900		1.01	4.1	16.35	2.5
		2	295.0		1300		1.42	6.0	21.74	
275A	276.0	1	317.0	0.7	1050		1.21	4.9	20.73	0.4
		2	323.0		1500		1.51	7.2	27.94	
300A	300.5	1	342.5	0.7	1200		1.03	4.2	21.05	2.5
		2	348.5		1700		1.31	6.1	28.26	

Tuf Omega Bellows Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
25A	26.5	1 2	39.0 41.0	0.3	80 115	160 225	4.3 8.2	22.8 32.9	1.01 1.45	5.0
32A	32.0	1 2	49.0 51.0	0.3	100 140	170 240	1.9 7.6	21.3 30.5	1.48 2.18	5.0
40A	40.5	1 2	57.0 59.0	0.4	110 155	180 255	3.0 6.2	16.2 24.8	2.07 2.89	5.0
45A	45.0	1 2	64.0 66.0	0.4	115 160	190 270	2.5 6.1	13.1 24.7	2.16 2.98	3.2
50A	53.0	1 2	73.0 75.0	0.4	120 170	200 280	1.7 4.1	8.7 16.5	2.81 3.63	5.0
65A	66.5	1 2	87.9 90.4	0.4	140 200	225 315	2.1 5.0	11.8 20.1	3.6 4.77	5.0
80A	78.0	1 2	103.5 106.0	0.4	200 280	250 350	1.3 3.7	9.0 15.1	4.16 5.4	5.0
90A	92.0	1 2	119.5 122.0	0.4	220 310	275 390	1.1 2.8	5.7 11.3	5.14 6.91	5.0
100A	103.0	1 2	129.5 132.0	0.4	240 340	300 420	1.2 2.8	5.3 11.4	5.56 7.33	5.0
125A	128.0	1 2	157.0 160.0	0.45	350 490		1.34 1.34	5.6 8.5	7.8 10.28	5.0
150A	151.5	1 2	184.0 187.0	0.45	400 560		0.96 0.96	4.1 6.1	9.04 11.79	5.0
175A	177.0	1 2	210.0 213.0	0.5	500 700		1.1.4 1.14	5.0 7.4	12.23 16.53	2.5
200A	202.5	1 2	238.5 243.5	0.5	600 840		1.06 1.06	4.4 6.7	14.25 18.52	2.5
225A	226.5	1 2	264.5 269.5	0.6	650 910		1.22 1.34	4.9 7.3	18.48 23.84	2.5
250A	250.5	1 2	290.5 295.5	0.6	700 980		1.01 1.16	4.5 6.0	20.52 25.88	2.5
275A	275.5	1 2	317.5 323.5	0.7	800 1120		1.21 1.51	4.9 7.2	26.03 33.24	0.4
300A	300.0	1 2 	343.0 349.0 344.0	0.7	900 1260		1.03 1.44 1.05	4.2 5.8 4.2	27.44 34.65 39.2	2.5
350A	343.0	1 2 3	389.0 395.0 391.0	1.0	It's keep in view		1.07 1.82 1.1	4.3 7.3 4.4	29.00 39.00 42.9	2.5
400A	393.0	1 2 3	441.0 447.0 445.0	1.0			1.08 1.83 1.1	4.3 7.4 4.4	42.4 53.2 51.1	2.5

2Ply Omega Bellows

Construction:

Excellent flexibility and durability.
Safety is higher according to 2ply constructions.
It is excellent anti-corrosion because inner ply is adopted by SUS316L

Working and Burst pressure of flexible hose with single and double braid shows calculated figures at ambient

2ply Omega Bellows Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst P ressure		
40A	40.5	1	56.50	0.3/0.4	200	270	2.7	13.7	2.7	2.1
		2	58.50		280	380	5.5	22.2	3.5	
50 A	53.5	1	73.00	0.3/0.4	250	280	3.8	20.7	3.2	2
		2	75.50		350	395	7.6	30.4	4.3	
65A	67.0	1	88.50	0.3/0.4	300	320	2.5	12.7	3.7	2
		2	91.00		420	450	5.8	23.2	6.0	
80A	78.5	1	103.00	0.5/0.4	400		1.8	8.4	4.7	4
		2	105.50		560		4.1	16.6	7.2	
100A	103.5	1	130.50	0.5/0.4	700		1.2	6.3	6.6	4
		2	134.50		980		2.7	10.9	10.6	
125A	128.5	1	157.50	0.6/0.45	750		1.67	6.7	9.7	4.2
		2	161.50		1050		2.87	11.5	14.8	
150A	152.0	1	184.50	0.6/0.45	800		1.19	4.8	10.1	4.2
		2	188.50		1120		2.10	8.4	15.5	
200A	203.0	1	238.00	0.6/0.5	900		1.10	4.4	14.3	2.5
		2	243.00		1260		1.87	7.5	22.9	
250A	251.0	1	291.00	0.7/0.6	1100		1.25	5.0	22.7	2.5
		2	297.00		1540		2.12	8.5	35.3	
300A	300.5	1	343.50	0.7/0.7	1300		1.20	4.8	30.3	2.3
		2	350.50		1820		1.93	8.2	46.7	
350A	346.0	1	391.00	0.8/0.8	1500		0.65	2.6	39.0	1.1
		2	397.00		2100		1.15	4.6	53.9	
400A	396.0	1	442.00	0.8/0.8	1800		0.50	2.0	42.3	1.1
		2	448.00		2520		1.04	4.2	60.3	

Excellent Tubes & Soft Tubes

Construction:

Excellent durability and Excellent pressure resistance

1. Tube without braid shows max pressure when pressurized and remaining elongation is nil.
2. Maximum working pressure of flexible hose with single braid shows calculated figures at ambient.
3. Maximum working pressure of flexible hose with double braid shows 1 /4 of burst pressure.
4. Test pressure shows actual tested figures.

Excellent Tubes Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
8A	6.8	0	10.8	0.2	25	80	1.0	-	0.090	40
		1	12.3				11.7	67.9	0.203	
		2	13.8		35	115	24.7	98.9	0.316	
10A	10.0	0	15.0	0.25	30	100	1.0	-	0.183	40
		1	16.5				9.6	57.9	0.321	
		2	18.0		45	140	21.0	84.0	0.459	
15A	13.0	0	18.7	0.25	50	140	0.7	-	0.227	40
		1	20.2				6.0	36.2	0.379	
		2	21.7		70	200	13.5	54.3	0.531	
20A	18.7	0	25.3	0.3	70	150	0.7	-	0.410	40
		1	26.8				4.7	27.1	0.618	
		2	28.3		100	210	11.6	46.6	0.826	
25A	24.8	0	32.6	0.3	80	160	0.4	-	0.631	40
		1	34.6				5.6	32.7	1.009	
		2	36.6		115	225	12.4	49.9	1.387	
32A	32.0	0	41.2	0.3	100	170	0.2	-	0.715	20
		1	43.2				3.4	18.8	1.153	
		2	45.2		140	240	6.7	26.8	1.591	
40A	37.3	0	41.7	0.4	150	240	0.4	-	1.125	20
		1	49.7				3.8	21.3	1.831	
		2	51.7		210	340	8.1	32.4	2.537	
50A	50.0	0	62.0	0.4	200	270	0.3	-	1.595	20
		1	64.0				2.2	12.7	2.409	
		2	66.0		280	380	4.4	17.9	3.223	

Soft Tubes Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
10A	10.5	1	15.5	0.2	25	80	6.5	40.0	0.225	60
15A	13.5	1	19.0	0.2	30	90	4.1	23.1	0.263	60
20A	19.1	1	26.2	0.2	35	120	2.8	16.4	0.380	50
25A	25.3	1	33.5	0.2	45	130	3.5	20.4	0.640	40
32A	32.6	1	42.5	0.25	50	160	2.1	11.1	0.922	20
40A	38.5	1	49.0	0.25	85	170	2.5	12.1	1.149	20
50A	51.5	1	63.0	0.25	120	220	1.4	6.5	1.451	20

Special Spiral

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)			Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Test Pressure	Burst Pressure		
5A	5.6	0	8.3	0.25							
6A	6.1	0	8.1	0.20							
9A	9.5	0	13.0	0.25							
11A	11.0	0	16.3	0.25							
12A	11.7	0	15.7	0.15							
13A	12.9	0	17.0	0.25							
16A	16.2	0	21.3	0.20							
65A	64.0 66.0	0	76.5	0.40 0.25							

It is kept in view
Regarding Special spiral tube,
please consult us with required quantity and material tyne.

UFO Flex® & USF Flex

Construction:

Put 2ply stainless steel into spiral corrugation, the third outer of stainless steel welded, excellent durability, flexibility, excellent absorption of vibration in high pressure

Features

- Corrugation is unchanged even in hign pressure.
- Excellent absorption for sharp vibration, greater durability against repetition.
- Transformation does not concentrate in the part.
- It would not happen on injury even the using is bad.
- Resistance inside is softer like as rubber hose

1. Tube without braid shows max pressure when pressurized and remaining elongation is nil.
2. Maximum working pressure of flexible hose with single braid shows calculated figures at ambient.
3. Maximum working pressure of flexible hose with double braid shows 1 /4 of burst pressure.
4. Test pressure shows actual tested figures

UFO Flex® Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
8A	8.2	0	12.4	0.12	32	100	0.8	-	0.19	Regarding Special Overall length of the hose please contact us
		1	13.6				10.7	63.8	0.34	
		2	14.6			165	22.8	91.5	0.48	
10A	10.2	0	14.4	0.12	38	115	0.8	-	0.21	
		1	15.6				9.5	61.4	0.36	
		2	16.8			190	21.9	87.9	0.51	
15A	12.2	0	17.3	0.14	45	125	0.5	-	0.35	
		1	18.5				6.9	43.2	0.61	
		2	19.7			210	15.3	61.5	0.88	
20A	20.2	0	26.7	0.17	70	170	0.2	-	0.58	
		1	28.3				4.1	25.4	0.87	
		2	29.9			285	10.1	40.6	1.19	
25A	25.2	0	31.7	0.17	85	195	0.4	-	0.65	
		1	33.3				5.7	34.3	1.10	
		2	34.9			325	13.1	52.7	1.55	
32A	32.3	0	41.1	0.2	105	300	0.3	-	1.03	
		1	42.7				3.4	20.8	1.53	
		2	44.3			380	7.6	30.5	1.94	
40A	40.3	0	48.7	0.2	130	340	0.2	-	1.20	
		1	51.1				3.4	20.7	1.98	
		2	52.3			430	8.6	34.5	2.25	
50A	50.3	0	61.4	0.25	160	390	0.1	-	2.05	
		1	63.4				2.2	13.5	3.10	
			64.6			490	5.2	20.8	3.10	

UFO Flex® & USF Flex

Construction:

Extra-flexibility, it is softer like as rubber hose

Ultra Soft Flex Specifications

Nominal Dia	In. Dia	No of Braid Ply	Out. Dia	Tube Wall Thickness	Minimum Bending Radius		Pressure Nominal (MPa)		Mass (Kg/Meter)	Length (MAX)
					Fix	Repetition	Working Pressure	Burst Pressure		
8A	8.2	0 1	12.3 13.9	0.12	20	45	4.2	56.8	0.14 0.28	Regarding Special Overall length of the hose please contact us
10A	10.2	0 1	14.3 15.8	0.12	25	55	4.3	48.7	0.16 0.31	
15A	12.2	0 1	17.1 18.5	0.14	30	60	4.0	36.0	0.19 0.36	
20A	20.2	0 1	26.4 28.0	0.17	40	95	3.7	23.9	0.34 0.57	
25A	25.2	0 1	31.4 33.8	0.17	50	110	3.1	28.2	0.40 0.85	
32A	32.3	0 1	40.5 42.7	0.17	60	115	2.0	19.4	0.60 1.10	
40A	40.3	0 1	48.5 50.6	0.17	70	135	2.1	17.2	0.70 1.28	
50A	50.3	0 1	60.4 63.0	0.2	90	160	1.7	12.8	1.05 1.77	

Non Welded Screw Type

TF-1600 Non Welded Type

Features

- Maintenance free
- Connecting fittings are small, light and efficient in piping works

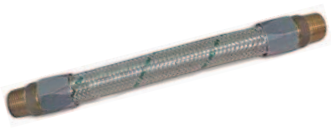
Construction

- Inserted swivel-nut into the straight pipe portion at tube end.
- Tube end to be sealed by means of direct contect of metal surface by inserting adaptor

Nominal dia. : 8A ~ 25A

Type	Size	Inch
TF-1608	8A	R,Rc 1/4
TF-1610	10A	R,Rc 3/8
TF-1615	15A	R,Rc 1/2
TF-1620	20A	R,Rc 3/4
TF-1625	25A	R,Rc 1

TF-9700 Non Welded Type



Features

- The tube developed exlusively for fancoil unit
- Maintenance Free
- Connecting fittings are small, light and efficient in piping works

Nominal dia. : 8A ~ 25A

Type	Size	Inch
TF-9720	20A	R,Rc 3/4
TF-9725	25A	R,Rc 1

TF-1800 Non Welded Type

Features
- Flexibility, excellent absorption of vibration, excellent durability againts repetition
- Large seal surface assures a firm seal

Construction
- Sealed portion uni-molded with tube
- Tube, braid, fitting non-welded assembly construction

Nominal dia. : 15A ~ 50A

Type	Size	Inch
TF-1815	15A	Rc 1/2
TF-1820	20A	Rc 3/4
TF-1825	25A	Rc 1
TF-1832	32A	Rc 1.1/4
TF-1840	40A	Rc 1.1/2
TF-1850	50A	Rc 2

TF-9500 High-tech Welded Type

Construction
- Stable quality approved by Japan Water Supply Association.
- Bending free and easy setting even in small area
- Many variety of dia. & length

Type	Size	Dia	G	
2-5	13mm	12.4 mm	1/2	35mm
4-5	20mm	16.2 mm	3/4	45mm

Screw Welded Type

TF-1000 High-tech Welded Type

Construction
- Union fitting to be set loose

Features
- Easy Piping work and economical price

Nominal dia. : 10A ~ 50A

Type	Size	Inch
TF-1010	10A	Rc 3/8
TF-1015	15A	Rc 1/2
TF-1020	20A	Rc 3/4
TF-1025	25A	Rc 1
TF-1032	32A	Rc 1.1/4
TF-1040	40A	Rc 1.1/2
TF-1050	50A	Rc 2

TF-1100 High-tech Welded Type

Features
- Welding part is used to stainless steel, good corrosion resistance

Construction
- Union fitting to be set loose

Nominal dia. : 10A ~ 50A

Type	Size	Inch
TF-1110	10A	Rc 3/8
TF-1115	15A	Rc 1/2
TF-1120	20A	Rc 3/4
TF-1125	25A	Rc 1
TF-1132	32A	Rc 1.1/4
TF-1140	40A	Rc 1.1/2
TF-1150	50A	Rc 2

TF-1500 High-tech Welded Type

Features
- Material of fittings can be selected according to fluid

Construction
- Socket to be put onto tube

Nominal dia. : 8A ~ 50A

Type	Size	Inch
TF-1508	8A	Rc 1/4
TF-1510	10A	Rc 3/8
TF-1515	15A	Rc 1/2
TF-1520	20A	Rc 3/4
TF-1525	25A	Rc 1
TF-1532	32A	Rc 1.1/4
TF-1540	40A	Rc 1.1/2
TF-1550	50A	Rc 2

TF-5000 High-tech Welded Type

Construction
- Nipple to be put onto tube

Features
- Material of fittings can be selected according to fluid

Nominal dia. : 8A ~ 50A

Type	Size	Inch
TF-5008	8A	R 1/4
TF-5010	10A	R 3/8
TF-5015	15A	R 1/2
TF-5020	20A	R 3/4
TF-5025	25A	R 1
TF-5032	32A	R 1.1/4
TF-5040	40A	R 1.1/2
TF-5050	50A	R 2
TF-5065	65A	R 2.1/2

TF-6000 High-tech Welded Type

Features
- One touch fit or removal with piping

Construction
- Coupler is screwed into flexible tube with nipple

Nominal dia. : 10A ~ 80A

Type	Size	Inch
TF-6010	10A	R 3/8
TF-6015	15A	R 1/2
TF-6020	20A	R 3/4
TF-6025	25A	R 1
TF-6032	32A	R 1.1/4
TF-6040	40A	R 1.1/2
TF-6050	50A	R 2
TF-6065	65A	R 2.1/2
TF-6080	80A	R 3

TF-6500 High-tech Welded Type

Features
- One touch fitting with piping

Construction
- Quick Coupling is screwed into flexible tube with nipple

Nominal dia. : 10A ~ 80A

Type	Size	Inch
TF-6515	15A	Rc 1/2
TF-6520	20A	Rc 3/4
TF-6525	25A	Rc 1
TF-6532	32A	Rc 1.1/4
TF-6540	40A	Rc 1.1/2
TF-6550	50A	Rc 2
TF-6565	65A	Rc 2.1/2
TF-6580	80A	Rc 3
TF-6500	100A	Rc 4

TF-7000 High-tech Welded Type

Features
- One touch fitting with piping

Construction
- Quick Coupling is screwed into flexible tube with nipple

Nominal dia. : 10A ~ 80A

Type	Size	Inch
TF-7008	8A	R 1/4
TF-7010	10A	R 3/8
TF-7015	15A	R 1/2
TF-7020	20A	R 3/4
TF-7025	25A	R 1
TF-7032	32A	R 1.1/4
TF-7040	40A	R 1.1/2
TF-7050	50A	R 2
TF-7065	65A	R 2.1/2

TF-7100 High-tech Welded Type

Features
- One touch fitting with piping

Construction
- Quick Coupling is screwed into flexible tube with nipple

Nominal dia. : 10A ~ 80A

Type	Size	Inch
TF-7108	8A	R,Rc 1/4
TF-7110	10A	R,Rc 3/8
TF-7115	15A	R,Rc 1/2
TF-7120	20A	R,Rc 3/4
TF-7125	25A	R,Rc 1
TF-7132	32A	R,Rc 1.1/4
TF-7140	40A	R,Rc 1.1/2
TF-7150	50A	R,Rc 2

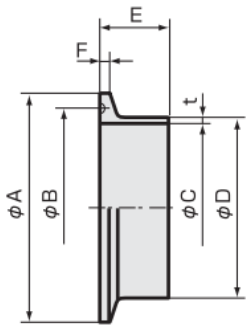
Ferrule Fitting (Welded Type)

Welded Ferrule Fitting

Features
- As ferrule are small, and light, easy for disasemble maintenance

Construction
- Construction Ferrule welded with tubes

Nominal dia. : IDF : IS ~ 61/2S

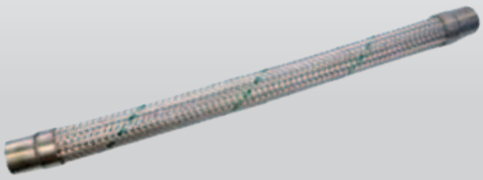


Welded Ferrule Fitting (Japanese Gas piping size)

Size	ØA	ØB	ØC	ØD	E	F	t	Kg		
8A	34	27.5	10.5	13.8	17	2.85	1.65	0.03		
10A	34	27.5	14	17.3	17	2.85	1.65	0.03	10	
15A	34	27 .5	17.5	21 .7	17	2.85	2.1	0.03	15	
20A	50.5	43 .5	23 .0	27 .2	21 .5	2.85	2.1	0.08	20	Super Annular
25A	50.5	43 .5	28	34	21 .5	2.85	3	0.085	25.4	
32A	50.5	43.5	36.7	42 .7	21 .5	2.85	3	0.075	32	
40A	64	56.5	42.6	48 .6	21 .5	2.85	3	0.12	40	
50A	77.5	70.5	54.5	60.5	21 .5	2.85	3	0.15	50	
65A	91	83.5	70.3	76.3	21 .5	2.85	3	0.14	67	
80A	106	97	83.1	89.1	21 .5	2.85	3	0.18	78.5	
90A	119	110	95.6	101.6	28 .0	2.85	3	0.24	92.5	
100A	130	122	108.3	114.3	28 .0	2.85	3	0.34	103.5	Tuf Omega Tube
125A	155	146	133.8	139.8	28 .0	5.6	3	0.48	128.5	
150A	183	174	159.2	165.2	28	5.6	3	0.63	152	
200A	233.5	225	208 .3	216.3	28 .0	5.6	4	0.8	203	

Welded Ferrule Fitting (IDF)

	ØA	ØB	ØC	ØD	E	F	Kg	Size		
18	50.5	43.5	23	25.4	21.5	2.85	0.072	20A	20	
1-1/48	50.5	43 .5	29.4	31.8	21.5	2.85		25A	25.4	
1-1/28	50.5	43.5	35.7	38.1	21.5	2.85	0.05	32A	32	Super Annular
28	64	56.5	47.8	50.8	21.5	2.85	0.078	40A	40	
2-1/28'	77.5	70.5	59.5	63.5	21 .5	2.85	0.113	50A	50	
38	91	83.5	72.3	76.3	21.5	2.85	0.138	65A	67	
3- 1/28	106	97	85.1	89.1	21.5	2.85	0.175	BOA	78.5	
48	119	110	97.6	101.6	28 .0	2.85	0.235	90A	92.5	Tuf Omega Tube
4-1/28	130	122	108.3	114.3	28 .0	2.85	0.342	100A	103.5	
5-1/28	155	148	133.8	139.8	28	5.6	0.477	125A	128.5	
6-1/28	183	174	159.2	165.2	28	5.6	0.63	150A	152	



Pipe End (Butt Welded Type)

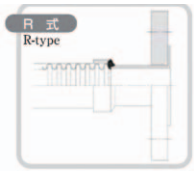
Please contact us with the pipe material, dimension (including the schedule and length) and beveling

Welded Flange Type

TFR - 2000 - 3000 - 4000

Features
As the both ends flanges are loose, pipe laying work is easily done.

Construction
The tube is butt-welded to the lap joint. Flanges at both ends are loose



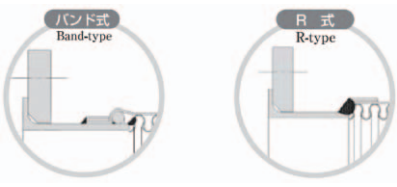
Nominal dia. : 10A ~ 50A

Type	Size
TFR-*010	10A
TFR-*015	15A
TFR-*020	20A
TFR-*025	25A
TFR-*032	32A
TFR-*040	40A
TFR-*050	50A

TF - 10000 High-tech Welded Type

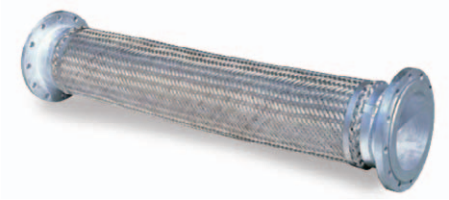
Construction
The standard flange is loose at the both end.

Nominal dia. : 65A ~ 300A



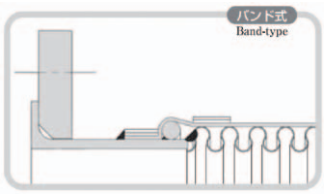
Type	Size			
TF-10065	65A	50		
TF-10080	80A	50	100	
TF-10100	100A	50	100	
TF-10125	125A		110	80
TF-10150	150A		110	85
TF-10200	200A		140	95
TF-10250	250A		140	95
TF-10300	300A		160	120

TF - 12000 High-tech Welded Type



Construction
The standard flange is fixed at one end loose at the other end

Nominal dia.
350A ~ 600A



Type	Size
TF-12350	350A
TF-12400	400A
TF-12450	450A
TF-12500	500A
TF-12550	550A
TF-12600	600A

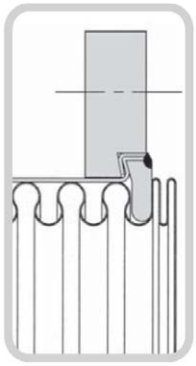
Non Welded Type

TF 20000 - Non Welded Type

Features
- A the effective length is long, allowing pipe laying with vibrations and repeated off-sets
- Connecting surface are all stainless steel

Construction
Non welded swivel flanges are loosely installed on the tube enabling connection to the standard flanges

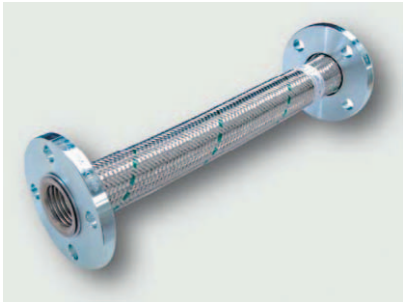
Nominal dia.
120A ~ 300A



Type	Size
TFR-*010	10A
TFR-*015	15A
TFR-*020	20A
TFR-*025	25A
TFR-*032	32A
TFR-*040	40A
TFR-*050	50A

(A)	kg m
20 ~ 40	5~8 (49.1~78.5N m)
50 ~ 100	8~10 (49.1~78.5N m)
125 ~ 150	14~18 (137.3~176.6N m)
200 ~ 300	16~20 (157.0~196.2N m)

TF 48000 - Non Welded Type

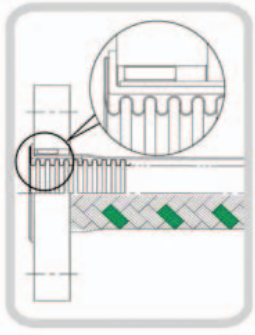


Features
- Large seal surface assures a firm seal
- No risk of detorioration of material or stain because of non-welded
- Connecting surface are all of stainless steel

Construction
- Non welded swivel flanges are loosely installed on the tube enabling connection to the standard flanges
- Integrate seal surface with tube
- End of braid is pressed and fixed with press-ring

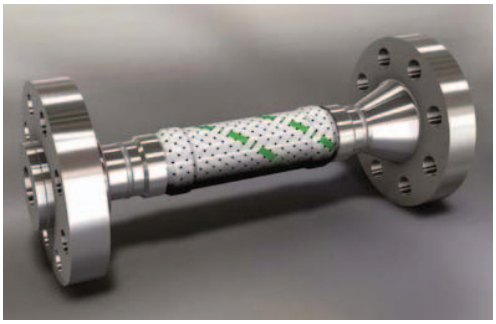
Nominal dia. 20A ~ 50A

Material. Stainless Steel



High Pressure Flexible tube Usable for 20MPa

THP - 20 MPa



Features of THP Hose

1. A flexible tube of stainless steel for high pressure
2. It is flexible enough to use as usual flexible tubes

Size	ID		OD						
mm	mm		mm	mm	MPa	MPa	mm	kg/m	m
		2	17.8		16	64.8	100	0.60	
10A	9.6	3	19.3	0.3X8X24	24	96.5	150	0.75	10
		4	20.6		25	108.6	150	0.90	
		2	21.7		13	53.6	170	0.80	
15A	12.8	3	23.6	0.3X8X32	20	80.9	170	1.01	10
		4	25.0		24	99.4	170	1.22	
		2	29.7		16	67.1	190	1.13	
20A	18.5	3	32.4	0.4X8X40	22	88.9	200	1.51	10
		4	35.2		24	98.0	200	1.89	
		2	36.5		9	36.7	310	1.45	
25A	24.6	3	39.1	0.4X8X40	14	56.4	310	1.86	10
		4	41.5		17	70.3	310	2.24	
		2	46.2		8.5	34.8	400	2.27	
32A	32.4	3	49.2	0.4X10X48	12	48.8	400	3.00	10
		4	51.5		16	65.3	400	3.68	
		2	51.8		5.5	21.9	600	3.22	
40A	37.0	3	54.2	0.4X10X48	9	36.4	700	4.03	10
		4	56.5		11.5	45.8	700	4.85	
		2	67.2		6	25.0	750	4.41	
50A	50.0	3	69.8	0.5X8X72	9	37.8	800	5.58	10
		4	72.5		10	50.5	800	6.75	

1. Burst pressure shows tested figures
2. Working pressure is calculated as 1/4 or u nder of the tested figures of burst test

Flexonics Tofle, carried out and international standard ISO 10380 required tests successfully for the above highlighted tubes, for the clients who require it

Fire Extinguish Pump For Vibration Absorber

Flexible Hose for High Pressure Water Pump Device

Fire and Disaster Management Agency regulates the construction and required performance for Flexible hoses connected with Pump related piping system used for sprinklers and fire fighting equipments, etc. The construction and the required performance of the flexible hoses are confirmed and approved by Fire Protection Equipment and Safety center of Japan.

TFK-23000 · 24000 - High-tech Welded Type and Non Weld Type

Construction :
- TFK-23000 (JIS 10K) :
- Sealing Material : SUS316L
- Under 200A - NW Type (Non Welded)
- 250A~300A - Welded Type

TFK-23000 (JIS 10K) :
- Sealing Material : SUS316L
- Under 200A - NW Type (Non Welded)
- 250A~300A - Welded Type

Features :
Tubes are Omega tubes, having excellent flexibility and pressure resistance.

Nominal Dia :
- JIS10K : 32A – 300A
- JIS20K : 40A – 200A

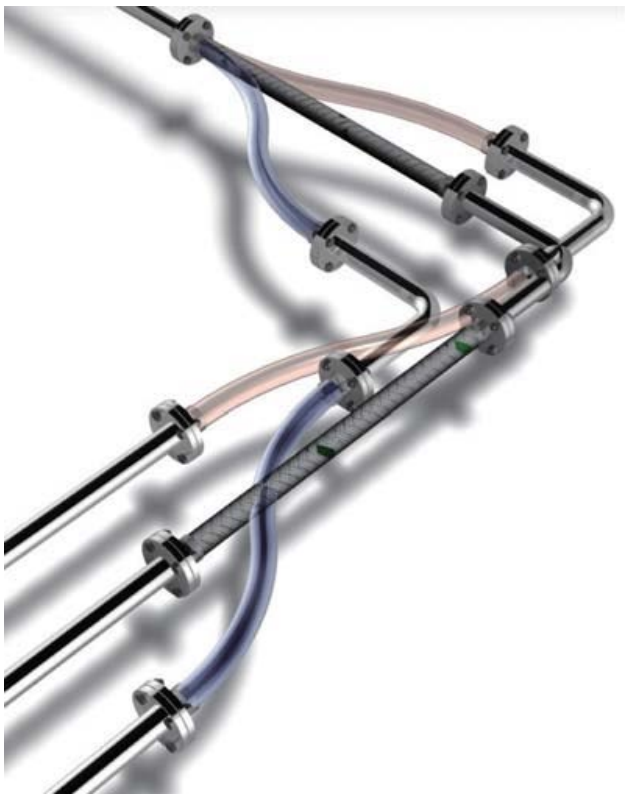
Standard of length :
- 300AL ~ 150AL

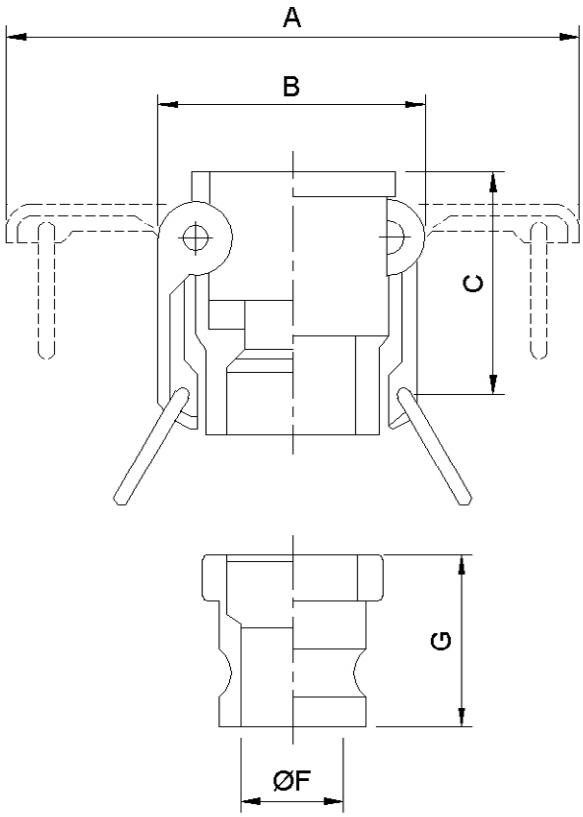
Max Press :
- 10KF : 1.4 MPa
- 20KF : 2.8 MPa

Non Welded Type

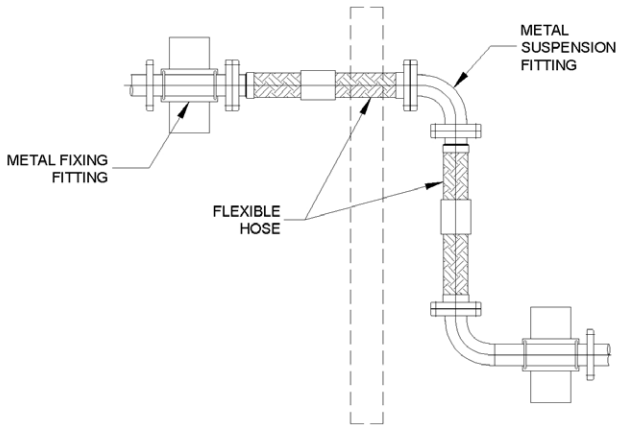
High-Tech Welded Type

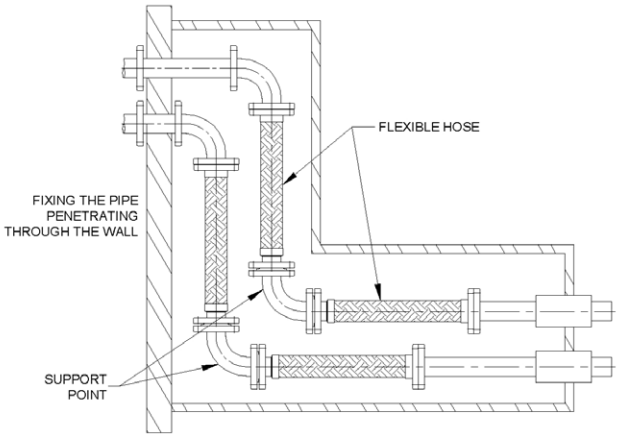
Flexible Tube for Expansion Joint Part
TF-23000, TFR-3000, TF-10000, TF-12000, TFK-23000, TFK-24000





Please refer to the related catalog for more information

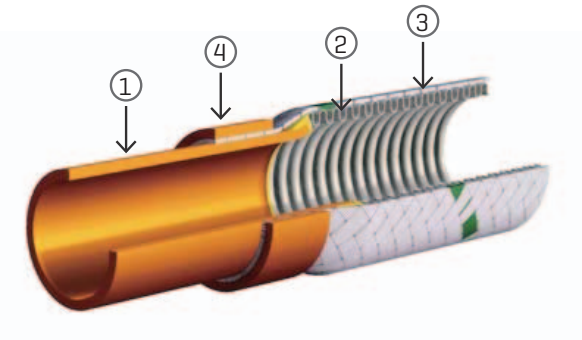


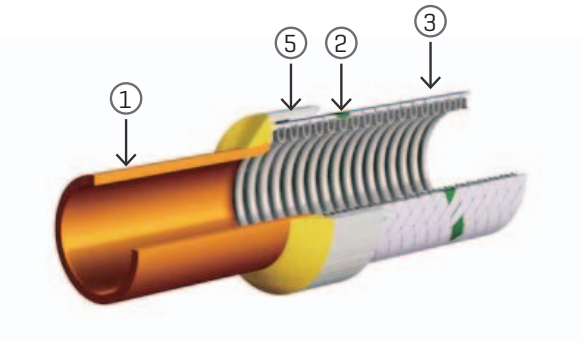


For copper piping refrigerant
JIS H 3300 C 1 220 T

JIS B 8607
Flexible tube for JIS B 8607 Refrigerants, Class 2

Features :
Flexible tube with Copper pipe end for the high pressure refrigerants for vibration absorption of Air conditioning piping/Refrigeration piping is complied with the requirement of JIS H 3300 C1220T and Refrigeration safety Rule





	Name	Material
1	Copper Pipe	C1220T
2	Tube	SUS316L ~ SUS321
3	Braid	SUS304
4	Crimp ring	C1220T
5	Braid ring	SUS304

Please ask us for different OD, i.d & Thickness from the standard

Nominal Dia	Copper Pipe (mm) Standard (OD)	Tube	
		Size	Ø ID
1/4	9.52	8A	8.0
3/8	12.70	10A	10.0
1/2	15.88	15A	15.0
5/8	19.05	15A	15.0
3/4	22.22	20A	20.0
1	25.40	25A	25.4
1	28.58	25A	25.4
1	31.75	32A	32.0
1 1/4	34.92	32A	32.0
1 1/2	41.28	40A	40.0

Features :
Usage condition of Flare pipe Joint (Class 2) - for cool/hot water

- Where there is no external force by vibration or bending
- For non-toxic or non-flammable refrigerants

Specification:
Maximum Working Pressure : **4.3 Mpa**
Burst Pressure : 18 Mpa and above
High Pressure Refrigerant : R410A
(*usable for New or enviromentally friendly refrigerants R32*)

JIS B 8607 - Class of Refrigerants and Maximum working pressure

Class	Max Working Pressure	Aplicable Refrigerant
1	3.45MPa	R22, R134 a, R404A, R407C, R507A
2	4.30MPa	R410A, R32
3	4_80MPa	Refrigerants used at 4.30 MPa to 4.80 Mpa
5/8	19.05	15A
3/4	22.22	20A
1	25.40	25A
1	28.58	25A
1	31.75	32A
1 1/4	34.92	32A
1 1/2	41.28	40A

For Automotive Application

Flexible hoses for automotive sector are designed for conveying hot air or fluids like water mixed with anti-freeze liquids. Suitable to be used in cooling systems and exhaust systems of cars and industrial vehicle engines.

The advantages flexible hose in automotive:

1. Transfer media hot fluids or gases from one piping system to others in not alignment/ center position
2. Transfer media although in vibration condition (ex: exhaust system)

Option

Casing

SUS302 anti-kink armor casing prevents over-bending/kinking of hose and provides chafe protection for the wire braid.

Rubber Cover

Etylene Polypelene Rubber (NPM) protects external braid. Gives advantage of anti corrosion. Especially it is recommendable for under ground usage.

Spring

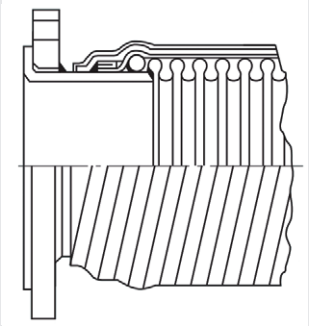
The spring prevents over-bending and protects the wire braid from abrasion and contains potential stress at the fittings.

Glass Braid

Grass braid made in glass fiber protects the hose from external heat/flame. It also helps insulate hot internal materials from the worker's touch.

PTFE Insert

TFR-2000, TFR-3000, TFR-4000, TFR-10000, TFR-14000



Denso & Eslon Tape for Underground

Anti Corrosive Type

Nylon fabric tape consisting of anti-rust agent is wound onto the hose. It forms the semipermanent viscosity adhesive layer which is resistant to acid, alkali and salt.

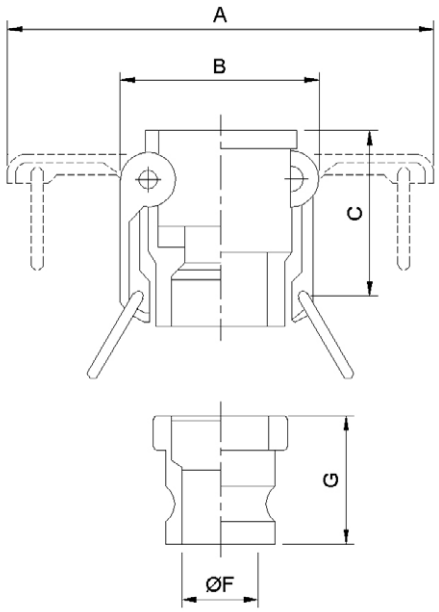
Working Temperature range :
-170°C ~ 55°C

Protection Type

Adhesive vinyl chloride tape protect the hose from splashes of corrosive liquid and friction with other parts

Fitting Option

Quick Coupling



High versatility Material:

- Bronze(casting)
- Stainless Steel (SUS316)
- Aluminum Alloy
- High Quality and Superb Interchangeability: as manufactured to meet MIL-C27487

Nominal	"D" Coupler				"A" Adaptor		
	A	B	C	(g)	Ø F	G	(g)
15	51.5	24.5	46	170	14	41	90
20	110	53	52	260	20	42	140
25	125	60	61	380	24	46	180
32	180	83.5	69	670	30	54	290
40	188	91	71	780	36	56	420
50	196	100	80	1000	46	63	560
65	210	113	82	1270	57.5	79	990
80	249	137	90	1560	73.2	71	1180

Nominal	"D" Coupler				"A" Adaptor		
	A	B	C	(g)	Ø F	G	(g)
15	110	54.7	51	260	18	40.5	170
20	110	54.6	51	220	19	40.5	140
25	125	62	60	340	23	48	180
32	180	73.5	70	640	28	54	290
40	185	84	71	740	36	55	370
50	197	92	76	840	45	62	470
65	206	104.1	80	1070	57	82	960
80	250	129.3	89	2040	70	70	1050

Fittings & Flanges

Flanges or fitting is very popular use in piping system. Fitting specific use in small diameter with high pressure and temperature. There are 3 Standard dimension of flanges:

1. ANSI
2. JIS
3. DIN

Clasified fittings base on the type of thread

1. ISO Metric
2. NPT Thread
3. BSP Thread
4. UNC (Unified Coarse)/UNF (Unified Fine) Thread

Kind of fittings and flanges

1. Slip On Flange
2. Hexagonal Male
3. Female Swivel / Union
4. Lapped Joint & Stub end
5. Welding Neck Flange
6. Internal / External Threaded Pipe
7. Etc.

Proper Handling of Flexible Tubes

The key to extending the service life is to select the model best suited for the operating conditions and handle it correctly

Do not twist the tubing

No twist or torque can be absorbed by flexible tubing

- Be sure to fasten the screw metal fittings using two wrenches
- Bend the tubing only within one plane

Do not bend the tubing excessively

An extremely small bend decrease pressure resistance.

- Stricly observe the specified bending radius of the tubing

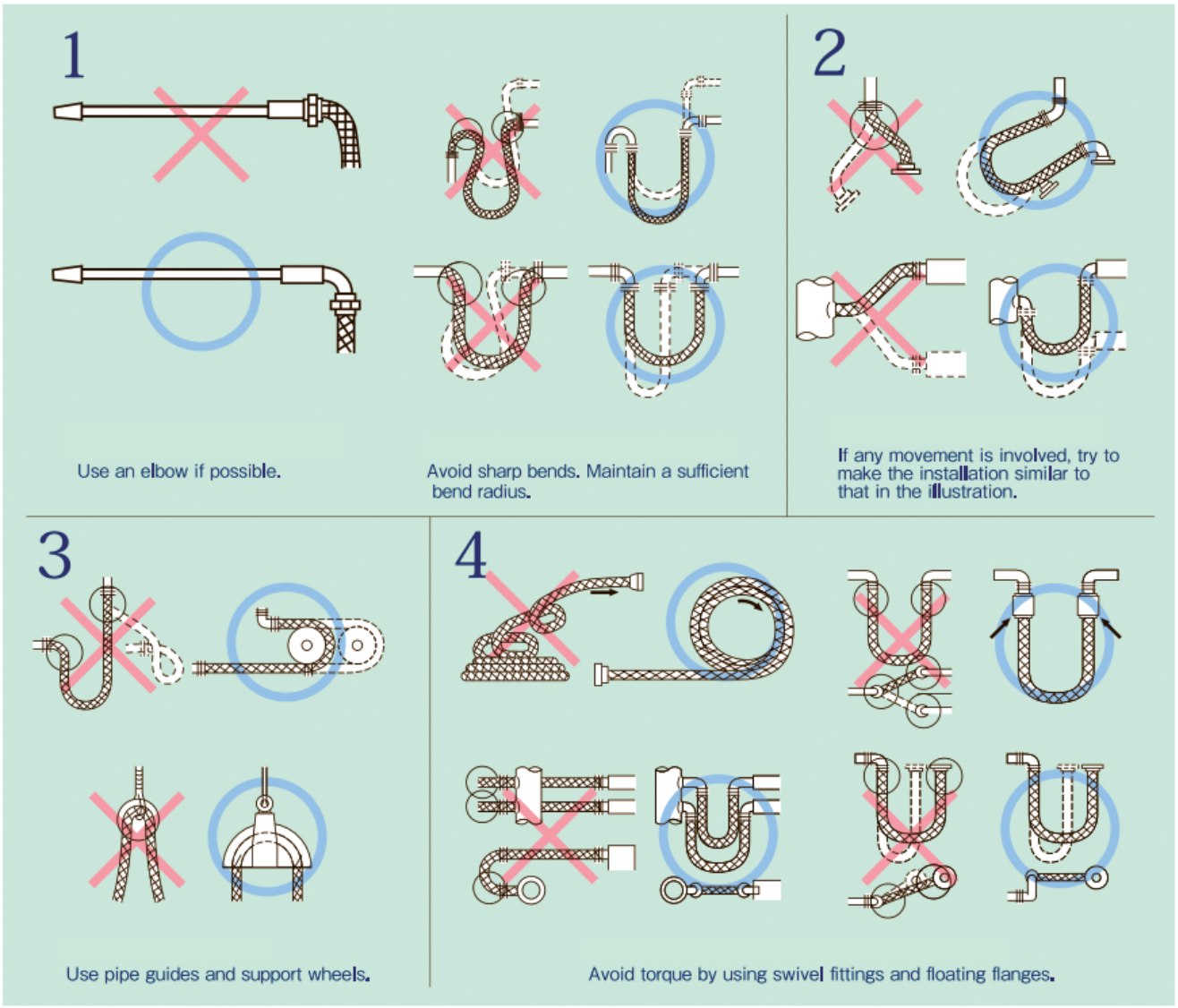
Use a sufficient length of tubing

A tensile load applied to wire-braided tubing aecreases pressure resistance

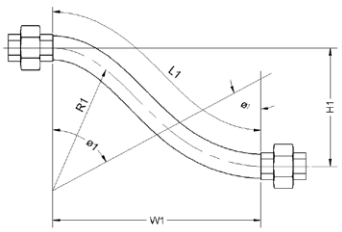
- Use a sufficient length of tubing to avoid tensile load

Support Any hose Located Next to the Tube

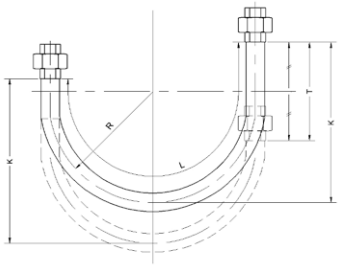
Any unsupported vibrating hose may amply vibration



Length of Flexible Tubes for Piping with Movement & Preventions of Corrosion

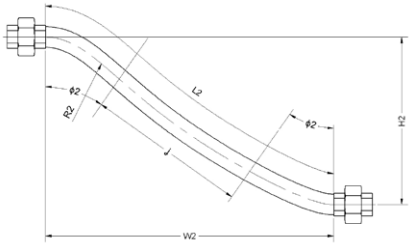


Offset motion

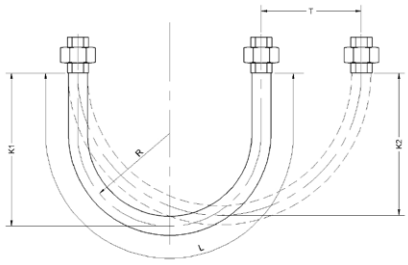


Differential U (1)

Offset motion
L = 4R+T/2
K = 1.43R+T/2



Offset motion
$L1 = 2R_1\theta_1$
$W1 = 2R1Sin\theta_1$
$H1 = 2R1\,[1-Cos\theta_1]$
$L2 = 2R2\theta_2 +$
$W2 = 2R2Sin\theta_2 + Cos\theta_2$
$H2 = 2\,R2\,[1-Cos\theta_2]+Sin\theta_2$



Differential U (2)

Offset motion
L = 4R+1.57T
K_1 = 1.43R+0.785T
K_2 = 1.43R+T/2

Length Required for Flexible Tube

Type	Deflection (mm)												
	10	20	30	40	50	60	70	80	90	100	120	140	160
10A	85	165	245	330	410	490	575	655	735	820	980	1145	1305
15A	85	165	245	330	410	490	575	655	735	820	980	1145	1305
20A	85	165	245	330	410	490	575	655	735	820	980	1145	1305
25A	90	165	245	330	410	490	575	655	735	820	980	1145	1305
	85	165	245	330	410	490	575	655	735	820	980	1145	1305
32A	90	165	245	330	410	490	575	655	735	820	980	1145	1305
	85	165	245	330	410	490	575	655	735	820	980	1145	1305
40A	100	165	245	330	410	490	575	655	735	820	980	1145	1305
	90	165	245	330	410	490	575	655	735	820	980	1145	1305
50A	100	165	245	330	410	490	575	655	735	820	980	1145	1305
	90	165	245	330	410	490	575	655	735	820	980	1145	1305
65A	105	165	245	330	410	4904	575	655	735	820	980	11451	1305
80A	105	165	245	330	410	90	575	655	735	820	980	145	1305
100A	120	170	245	330	410	490	575	655	735	820	980	1145	1305
125A	130	185	245	330	410	490	575	655	735	820	980	1145	1305
150A	145	200	245	330	410	4904	575	655	735	820	980	1145	1305
200A	175	245	300	340	410	90	575	655	735	820	980	1145	1305
250A	190	270	330	380	425	490	575	655	735	820	980	1145	1305
300A	220	310	380	440	490	535	580	655	735	820	980	1145	1305

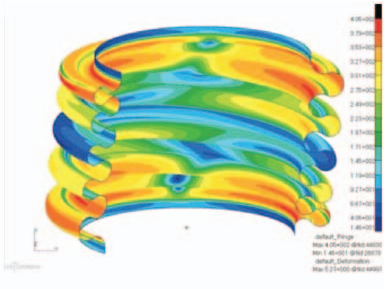
- The above table show the Effective lengths of Flexible Hose
- The Overall length is calculated by adding the effective length with the fittings .
- The Above figures are minimum length. It is recommendable on Fittings. (As a Rough guideline, the above figures + hose diameter x 2 would be preferable)
- The required length for Parallel deflection would be formulated as next. (to absorb 1% of hose extension)

10A~50A | Super Annular
25A~300A| Tuf Omega Tube
25A~50A | Upper Figure : Super Annular
Lower Figure : Tuf Omega Tube

Quality Control

Technological inspections and a total quality control system that ensures safety and reliability.
Our carefully selected materials and high-precision parts are managed using an automated warehouse system. These parts and materials are then usea by our factories to produce a constant stream of products of guaranteed quality. With a production capacity of 150,000 units per month, Hidroflex Indonesia can fill orders in a very shorttime.

CAD

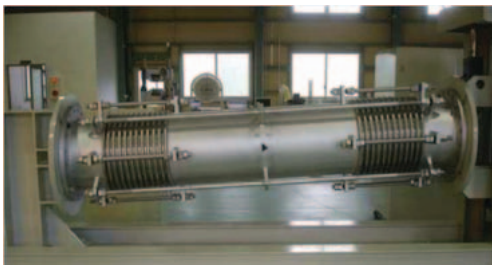


CAD Screen
Tube cross section for stress distribution chart by FEM (finite Element Method) analysis

The harshness of surface outline measurement machine
The harshness of Surface mentioned on drawings and R forming on metal sheet, which were impossible to measure so far, could be measured and evaluated by the visual observation from outside.

Scanner type electron microscope
1. To specify the cause of crack by taking an enlarged picture of broken-out section.
2. To analyze the adhesions and the components caused by corrosion.
3. To analyze the components of base materials and to specify them

Taking an X-ray is available at our company.

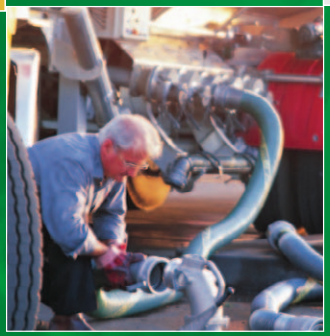


Displacement test
Through repeated axial displacement-such as might occur due to ground settling during an earthquake, or to the rocking or an LNG(liquened natural gas) tanker-we check durability and measure reaction rorce during displacement.

Fatigue tester
Test for material tensile stress, com press fatigue test (low reaction force test is possible)
Dynamic maximum load:±20KN
Driving stroke :±50mm
Frequency : 0 ~ 30 Hz

Vibration tester
Test for material tensile, compress deflection vibration.(As it Is operated by PC, the data management is possible.)
Driving stroke : ±50mm
Frequency : Up to 1000 Hz

COMPOSITE HOSE



Composite Hose

Composite Hoses are design to meet the most demanding conveyance transfer application, having the characteristics of light-weight, strength, flexibility, and versatility for variations in pressure and temperature and conveyance compatibility.

Composite Hoses - Hydrocarbons

The most vulnerable link in the chain of production, distribution and use of bulk hydrocarbons is the point of transfer. Flexible Piping System produce a comprehensive range of composite hoses, specifically engineered to safely and easily handle hydrocarbons, including: oils, petrol, diesel, lubricating oils, paraffin and 100% aromatics, in all kinds of transfer

Features

- Standard Fuelmaster Code 1000 and Oilmaster 901 hoses are designed as general purpose hoses for the transfer of a wide variety of hydrocarbon conveyant under suction or pressure
- Standard Duty Fuelmaster hoses are used in such applications as low pressure transfer for road and rail tanker loading and discharging, storage tank and in-plant use. Conveyants include light distillates such as petrol, diesel, paraffin/kerosene and 100% aromatics.
- Where exceptionally low weight is required, Lightweight Fuelmaster Code 1003 substitutes an aluminium inner spiral. It is suitable for similar conveyants to the standard Fuelmaster 1000.
- Standard Duty Oilmaster hoses, for road and rail tanker and in-plant applications, are used for black oils and heavier lubricating products in addition to the same conveyants as Fuelmaster.
- Heavy Duty Oilmaster 982 hoses, including bores up to 250mm NB, are suitable for ship-to-shore, dockside and general shipboard use.
- Standard Aviation Hose code 900 AV substitutes an aluminium inner spiral together with a fine weave fray resistant inner liner designed specifically for use with aviation spirit.

Product Specifications

Type	Lightweight Fuelmaster	Standard Duty Fuelmaster	Standard Duty Oilmaster	Heavy Duty Oilmaster	Vapour Recovery Hose	Standard Aviation Hose
Code	1003	1000	901	982	VRH	900 AV
Temperatures	20° to +80°C	-20° to +80°C	-20° to +80°C	-20° to +80°C	-20° to +80°C	-20° to +80°C
Colour	Yellow/Green Stripe	Green/Yellow Stripe	Green/Red Stripe	Blue	Black/Yellow Stripe	Yellow

Construction

Inner Wire	Aluminium	Galvanised Carbon steel	Galvanised Carbon Steel	Galvanised Carbon Steel	Galvanised Carbon Steel	Aluminium
Wall Materials	[Polymeric fabrics and films selected according to resistance and strength]					
Outer Wire	Galvanised Carbon Steel	Galvanised Carbon Steel	Galvanised Carbon Steel	Galvanised Carbon Steel	Galvanised Carbon Steel	Galvanised Carbon Steel

Note:
All hoses are suitable for the temperature range -20° to +80°C but these are subject to pressure derating factors. Higher temperatures are permitted for intermittent use subject to confirmation by Flexible Piping System Technical Department.

Product Specifications

Nominal Internal Diameter mm	Maximum Working Pressure Bar	Minimum Bend Radius mm	Weight Kg/m	Maximum Manufacturing Length
Fuelmaster 1000 Standard Duty				
25	7	50	1.08	9.14
32	7	75	1.14	9.14
38	7	75	1.29	9.14
50	7	75	1.87	18.30
65	7	90	2.47	18.30
75	7	112	2.96	18.30
100	7	200	3.86	18.30
Fuelmaster 1003 Lightweight				
65	5	90	1.85	18.30
75	5	112	2.20	18.30
100	5	200	2.85	18.30
Standard Duty Oilmaster (901)				
25	14.00	100	1.10	9.14
32	14.00	125	1.23	9.14
38	14.00	140	1.89	9.14
50	10.40	180	2.02	18.30
65	10.40	200	2.59	18.30
75	10.40	280	3.17	18.30
100	10.40	400	7.90	18.30
150	10.40	480	12.90	9.14
Heavy Duty Oilmaster (0982)				
100	14.00	400	6.50	15.00
150	14.00	500	11.00	15.00
200	14.00	740	15.00	15.00
250	10.50	920	21.00	12.00
Vapour Recovery Hose VRH				
100	2	2002	3.44	18.30
Standard Aviation Hose (900 AV)				
65	5	90	1.85	18.30
75	5	112	2.20	18.30
100	5	200	2.85	18.30

Construction

Standard hydrocarbon hoses are manufactured from multilayers of polypropylene fabric and film with a weatherproof and abrasion resistant outer cover. The hose layers are held and tensioned between internal and external wire helices.

Computer-aided design has resulted in exceptional strength-to-weight ratios and extreme flexibility, giving the hoses excellent handling characteristics. This ensures ready operator acceptance and encourages good usage practice.

The standard production length is 18.3m (with the exception of 982). All hoses are supplied with factory-fitted end connections to the customer's requirements.

Fuelmaster hoses comply with Australian and International standards such as AS 2683, AS2117,BS3492 and A.I.P. code of practice CP-27.

Composite Hoses - Chemicals

The point of transfer is the most vulnerable link in the chain of production, distribution and use of bulk chemicals. Flexible Piping System produce an extensive range of composite hoses, chemically compatible and mechanically engineered to handle hazardous chemicals, safely and easily, in all kinds or transfer applications.

Features

- Chemifex 951 HD the original standard product with a working pressure of between 10.40 and 14 bar and bore diameters between 25mm and 100mm, is suitable for road, rail tanker and inplant applications. For standard duties, Chemiflex 951 offers superior flexibility for ease of use.
- Heavy duty Chemiflex 969/998 and Marine 1000 hoses are available in sizes up to 250mm diameter, offering higher working pressures and suitability for very arduous operating conditions including ship-to-shore, dockside and general shipboard use.
- The Chemiflex range incorporates as standard, a polypropylene covered inner wire and galvanised steel outer wire. Stainless steel can be substituted where appropriate.
- The full Flexible Piping System range includes a number of specifically engineered hoses incorporating other thermoplastic and fluorocarbon materials.
- These hoses are suitable for particularly hazardous working conditions or difficult to handle conveyants.

Product Specifications

Type	951/969	951HD/969HD	998	969
	Standard Duty	**Heavy Duty**	**Extra Heavy Duty**	**Extra Heavy Duty**
Colour/Code	Grey/Red Stripe Black/Orange Stripe	Grey/Red Stripe Black/Orange Stripe	Grey	Green
Temperatures	-20°to +80°C	-20°to +80°C	-20°to +80°C	-20°to +80°C

Note:
Temperatures are subject to pressure derating factors. Higher temperatures are permitted for intermittent use subject to confirmation from Flexible Piping System Technical Department

Construction

Inner Wire	951 Anti Static Polypropylene Covered Steel 969 Stainless Steel	951HD Anti Static Polypropylene Covered Steel 969HD Stainless Steel	Anti Static Polypropylene Covered Steel	Stainless Steel
Wall Materials	(Polymeric fabrics and films selected according to resistance and strength)			
Outer Wire	Galvanised Carbon Steel	Galvanised Carbon Steel	Galvanised Carbon Steel	Galvanised Carbon Steel
Nominal Internal Diameter mm	Maximum Working Pressure Bar	Minimum Bend Radius mm	Weight kg/m	Maximum Manufacturing Length (M)
CHEMIFLEX 951/969 Standard Duty				
25	7	100	0.9	9.14
32	7	100	1.0	9.14
38	7	125	1.2	9.14
50	7	125	1.6	18.3
65	7	150	2.1	18.3
75	7	175	2.5	18.3
CHEMIFLEX 951HD/969 Heavy Duty				
25	14	100	0.9	9.14
32	14	100	1.0	9.14
38	14	127	1.2	9.14
50	14	178	1.8	18.3
65	14	178	2.5	18.3
75	14	203	3.0	18.3
100	14	304	4.3	18.3
CHEMIFLEX 969EHD/998 Extra Heavy Duty				
150	14	500	11.0	15
200	14	740	15.0	15

Construction

Flexible Piping System chemical transfer hoses are constructed from multi-layers of thermoplastic film which form a sealing and permeation barrier, supported by fabric layers for mechanical strength. The hose layers are held and tensioned by internal and external steel wire helices. Flexible Piping System Chemiflex hoses comply with various national and international standards including AS2117 - 1991, BS5842 (1980) AND US. Coastguard regulations and can be marked accordingly. Chemiflex Marine 1000 hoses, type approved to IMO Codes BCH and IBC requirements are available on request.

The standard production length is 18.3m (with the exception of 969/998). Chemiflex hoses are supplied with factory fitted end connections to the customer's requirements. An extensive range of couplings either externally swaged or wire whipped available.

Composite Hoses - Cryogenics

The distribution and use of liquefied gases, the combination of high pressure and low temperature makes the point of transfer the most vulnerable link.

Flexible Piping System produce a comprehensive range of Cryoflex Composite hoses for handling cryogenics products at temperatures down to -200°C or at pressures up to 25 bar. These are specifically engineered to handle all kinds of transfer applications, notably ship-to-shore, safely and easily.

Features

- Cryoflex hoses are suitable for the transfer of a wide variety of cryogenic materials under pressure at low temperatures.
- Cryoflex hoses are used in such applications as roads and rail tanker loading and discharging, storage tank and in-plant use. Larger bores are indicated for ship-to-shore and ship-to-ship transfers.
- Fully refrigerated conveyants down to -50°C include the following as listed in Chap XIX Gas Carrier Code:
  - Ammonia
  - Acetaldehyde
  - Butadiene
  - Butane/Propane mixes
  - Butane/Butylene
  - Dimethylamine
  - Ethylamine
  - Ethyl Chloride
  - Methyl Acetylene
  - Methyl Bromide
  - Propane/Propadiene
  - Propylene
  - Vinyl Chloride
  - Refrigerant Gases
- Cryoflex 50 is also suitable for liquid ethane at -88°C and liquid ethylene at -108°C.
- Cryoflex 200 hoses are designed for similar applications but with liquid gases, such as liquid nitrogen and L.N.G. (methane), at extremely low temperatures down to -200°C. Cryoflex 200 is not suitable for conveying ammonia.

Product Specifications

Type	CRYOFLEX 50	CRYOFLEX 200
Colour	**White**	**White/Green Stripe**
Code	0940	0933
Temperatures	-50° to +50°C	-200° to +50°C

Construction : Inner & outer wires - 316 stainless steel
Wall materials : Polymeric fabrics & films selected according to resistance and strength.

Product Specifications

Nominal Internal Diameter mm	Maximum Working Pressure Bar	Minimum Bend Radius mm	Weight Kg/m	Maximum Manufacturing Length
CRYOFLEX 50 (0940)				
25	25	150	0.9	15
38	25	175	1.6	15
50	25	200	2.4	15
75	25	250	4.5	15
100	21	500	7.5	15
150	21	660	13.8	14
200	15	910	18.7	12
CRYOFLEX 200 (0933)				
25	10.5	150	0.67	9.14
38	10.5	175	1.20	9.14
50	10.5	200	2.00	18.30
75	10.5	250	3.30	18.30
100	10.5	500	7.50	15.00
150	10.5	660	13.80	15.00
200	10.5	910	18.70	12.00
250	10.5	2500	22.50	10.00

Note:
Standards: Cryoflex assemblies in bore sizes 100,150 and 200mm NB are certified by the UK Marine Safety Agency as complying with paragraphs 5.4 and 5.7 of the IMO Gas Carrier Code.

Construction

Cryoflex 50 is manufactured from multi-layers of polyamide fabric and film whilst Cryoflex 200 utilises polyester fabric and films. Both can be further insulated by an additional rope lagging.

Cryoflex 50 and 200 hoses have 316 stainless steel inner and outer wires achieving dual wire electrical continuity by bonding to the end fittings thus safely dissipating static electrical charges which may be generated during the transfer of fluids.

Cryoflex hoses provide a high degree of safety with hose construction having complete product compatibility to allow LPG, LNG and associated gases to be handled safely. In addition, working pressures across the temperature range are based on a safety factor, 5:1 minimum.

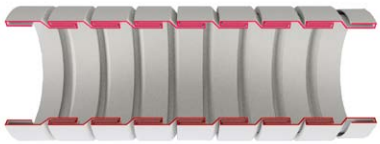
Cryoflex assemblies in 100. 150 and 200mm bore sizes are certified by the UK Marine Safety Agency as complying with the IMO Gas Carrier Code.

Cryoflex hoses are supplied in standard length of 9.14 metres, with optional lengths up to a maximum of 18.30 metres depending on diameter. All hoses have factory-fitted end connections.

INTERLOCK HOSE

Interlock Hose
Type 150P/150PS

Flexible Piping System Process manufacture a comprehensive range of flexlock stripwound hose for use on engine exhaust and flue duct applications. Hoses are available in either stainless steel or galvanised steel.



Hidroflex
Interlock Hose
Double Overlap Unpacked (DOU)

Construction
Flexible Piping System Process flexlock stripwound hose for exhaust and flue duct applications is made by winding profiled metal strip into a hose. The strip edges being completely interlocked. The diameter of the hose remains constant when hose is cut. Austenitic stainless steel hose is made from strip to AISI 304. Galvanised steel hose is made from deep drawn carbon steel electro-plated zinc galvanised strip to AS 1397-1973.

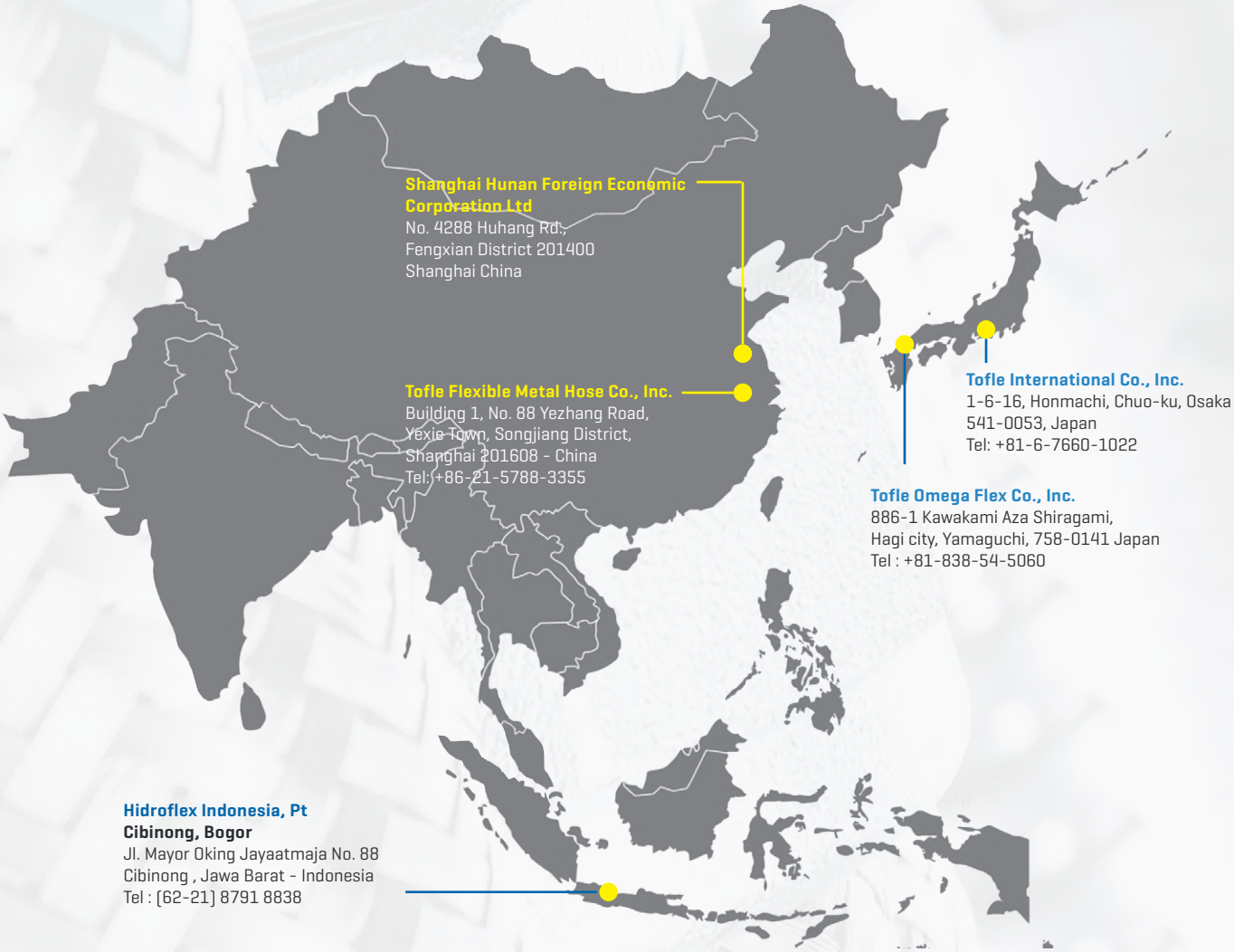
Performance
Stripwound hose is capable of accepting axial and torsional movements. Stainless steel offers longer service life and freedom from corrosion. The superior visual appearance and higher operating temperature capability of stainless steel may also be important in certain applications. Galvanised steel offers significantly lower initial cost for applications where performance of stainless steel is not required. The standard thickness of material shown in the data has been chosen in light of many years experience. For particular applications, alternative hose types and thicknesses are available on request.

Duties
Particularly suitable for absorbing vibration, thermal expansion in engine exhaust systems for commercial and industrial applications. Accommodate bends and offsets in solid fuel burning installations or in other ducting applications.

Lengths and end fittings
Hoses are available either in random lengths, or cut to the customer's specific requirements. Hoses are supplied in mid position unless otherwise specified. Hoses without end fittings may be attached directly to mainfolds by clamping. End fittings may be attached by welding or brazing using a suitable filler rod.

Product Specifications

Nominal		Approximate		Minimum		Approximate	
Internal	Diameter	External	Diameter	Bend	Radius	Wight	
mm	In	mm	in	mm	in	Kg/m	Lb/ft
32	1 1/4	35	1 3/8	230	9	0.76	0.51
38	1 1/2	42	1 5/8	250	10	0.89	0.60
42	1 5/8	45	1 3/4	262	10 1/2	1.00	0.67
45	1 3/4	48	1 7/8	280	11	1.03	0.69
48	1 7/8	50	2	280	11	1.07	0.72
50	2	53	2 1/8	300	12	1.10	0.74
56	2 1/4	60	2 3/8	312	12 1./2	1.25	0.84
65	2 1/2	66	2 5/8	330	13	1.49	1.00
70	2 3/4	72	2 7/8	406	16	1.56	1.05
75	3	78	3 1/8	406	16	1.73	1.16
90	3 1/2	91	3 5/8	460	18	2.08	1.40
100	4	103	4 1/8	500	20	3.00	2.01
112	4 1/2	112	4 5/8	500	20	3.35	2.25
125	5	128	5 1/8	525	21	3.65	2.45
150	6	153	6 1/8	525	21	4.46	3.00



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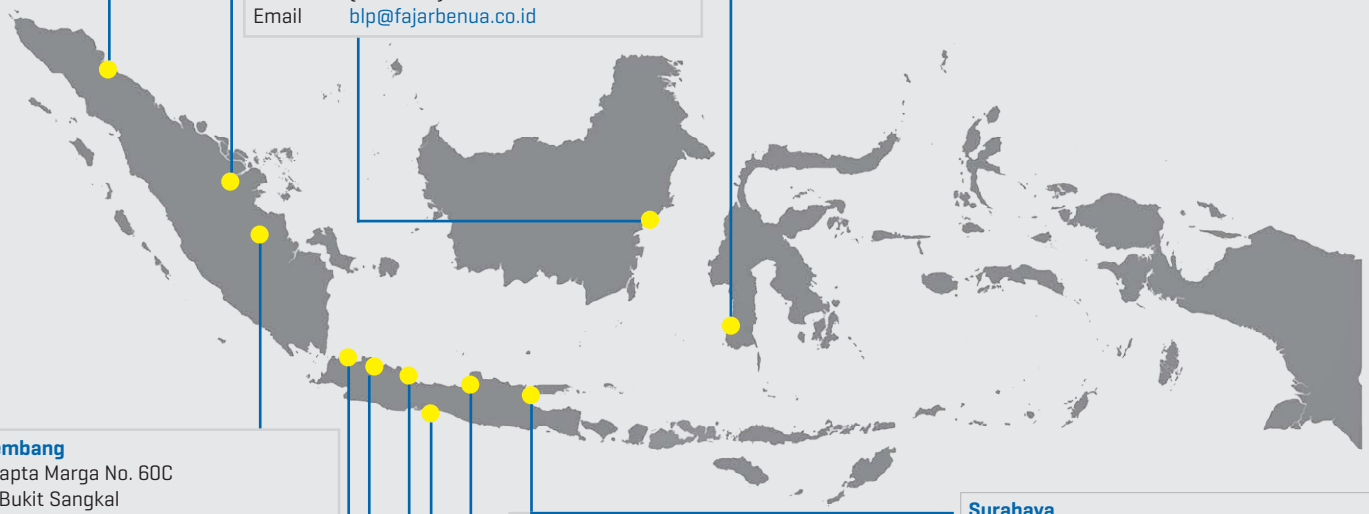

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Certification

Fire Equipment and Safety Center of Japan
- Certified the performance of Flexible Hose for High Pressure Water Pump Device as Fire Protection Equipment
- Certified the Performance of Flexible Metal Hose
- Certified the Performance of Fire Protect, Dual Flexible Metal Hose

Japan Waterwork Association
- Registered the factory by japan water work association (Registration no.0 – 64)
- Certified Flexible Hose for Water Supply System

Japan Inspection Association of Food and Food Industry Environment
- Bioflex and Corroflon Passed the Dissolution test

The High Pressure Gas Safety Institute of Japan
- Approved the welding procedure test

Type Approval by Classification Society
- Class NK
- Bureau Varietas
  - The Factory Approved
- DNV GL
  - The Welding Factory Approved
- Lloyd's Register
- The Korean Register of Shipping
- The American Bureau of Shipping
- China Corporation Register of Shipping
- RNA (The Royal Institution of Naval Architects)

SAI Global | ISO Certificate : Quality Management

System 9001 : 2015
- Certified System ISO 9001 : 2015 by TUV Nord
- Our Corrugated Metal Hoses are manufactured and tested to ISO 10380, AS 4041, AS 3992, BS 6501 (Part 1, 1991).
- Our Interlock/Stripwound Hoses are manufactured to BS EN ISO 15465:2004
- Our Composite Hoses are manufactured and tested in accordance with ISO 1402, BS 5173 (part 102 Section 102.1) and Fuelmaster Hoses comply with international standards such as AS 2683, AS 2117, BS 3492 and IMO BCH.
- Our Hose Assemblies have been tested, certified and audited by The Australian Gas Association

AGA
- Our company is also an audited member of Achilles. A supplier pre-qualification program for procurement and sourcing departments.

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Our Value, Solution for you

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